



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

November 04, 2013

WELL WORK PERMIT

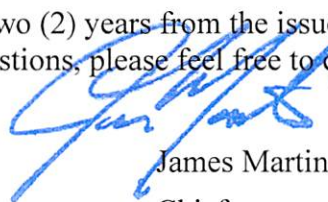
Secondary Recovery Well

This permit, API Well Number: 47-10302655, issued to HG ENERGY, LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: IRENE REILLY 16
Farm Name: WV PUBLIC LANDS CORP.
API Well Number: 47-10302655
Permit Type: Secondary Recovery Well
Date Issued: 11/04/2013

Promoting a healthy environment.

PERMIT CONDITIONS

West Virginia Code § 22-6-11 allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6-20, which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
2. Pursuant to 35 CSR § 4-19.1.a, at the request of the surface owner all water wells or springs within 1000 feet of the proposed well that are actually utilized for human consumption, domestic animals or other general use shall be sampled and analyzed.
3. Pursuant to 35 CSR § 4-19.1.c, if the operator is unable to sample and analyze any water well or spring within one thousand (1,000) feet of the permitted well location, the Office of Oil and Gas requires the operator to sample, at a minimum, one water well or spring located between one thousand (1,000) feet and two thousand (2,000) feet of the permitted well location.
4. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
5. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
6. During the surface casing and cementing process, in the event cement does not return to the surface, or any other casing string that is permitted to circulate cement to the surface and does not return to the surface, the oil and gas inspector shall be notified within twenty-four (24) hours.
7. Well work activities shall not constitute a hazard to the safety of persons.
8. If well work related activities require the use of water obtained by withdrawals from waters of this state in amounts that exceed two hundred ten thousand gallons during any thirty day period, the operator is required to consult, and adhere to, the guidance provided by DEP's Water Withdrawal Guidance Tool prior to any water withdrawals.

WW-3B
10/07



1) Date July 31, 2013
 2) Operator's Well No. Irene Reilly No. 16
 3) API Well No. 47 - 103 - 2655
 State County Permit
 4) UIC Permit No. UIC2R09501AP

STATE OF WEST VIRGINIA
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
FOR THE DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

5) WELL TYPE: Liquid Injection ☒ Gas Injection (not storage) _____ Waste Disposal _____

6) LOCATION: Elevation 1117' Watershed Fluharty Fork
 District Green County Wetzel Quadrangle Centerpoint 7.5'

7) WELL OPERATOR: HG Energy, LLC 494497948 8) DESIGNATED AGENT: Mike Kirsch
 5260 Dupont Road 5260 Dupont Road
 Parkersburg, WV 26101 Parkersburg, WV 26101

9) OIL & GAS INSPECTOR TO BE NOTIFIED: 10) DRILLING CONTRACTOR:
 Name Derek Haught Name To Be Determined Upon Permit Approval
 Address PO Box 85 Address _____
 Smithville, WV 26178

11) PROPOSED WELL WORK: Drill _____ Drill Deeper _____ Redrill _____ Stimulate _____
 Plug Off Old Formation _____ Perforate New Formation _____ Convert ☒ X
 Other Physical Change in Well (specify) _____

12) Geological target formation Gordon Depth 2,947 Ft. (Top) to 2,966 Ft. (Bottom)

13) Estimated depth of completed well (or actual depth of existing well) 3170' Ft.

14) Approximate water strata depths: Fresh 400 Ft. Salt 1,415 Ft.

15) Approximate coal seam depths: 840 Ft.

16) Is coal being mined in the area? Yes ☒ X No

17) Virgin reservoir pressure in target formation: 60 psig. Source Estimated

18) Estimated reservoir fracture pressure: 1200 psig.

19) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour 25 bbl/hr Bottom Hole Pressure 2400 psi

20) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES and other chemicals as needed to maintain water quality and improve oil recovery. Fresh water, produced water, bactericides

21) FILTERS (IF ANY) Cartridge filters and/or coal bed filters

22) SPECIFICATION FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL _____

DMH
8-12-13

23) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS					FOOTAGE INTERVALS		CEMENT FILLUP OR SACKS (CU. FT.)	PACKERS
	Size	Grade	Weight	New	Used	For Drilling	Left in Well		
Conductor									Kinds
Fresh Water	<u>7"</u>	<u>ST</u>	<u>17#</u>	<u>X</u>		<u>1094'</u>	<u>1094'</u>	<u>Use Existing Casing</u>	<u>Tension</u>
Coal									Sizes
Intermediate									<u>2.375" X 4.5"</u>
Production	<u>4 1/2"</u>	<u>J-55</u>	<u>10.5#</u>	<u>X</u>		<u>3089'</u>	<u>3089'</u>	<u>Use Existing Casing</u>	<u>Depths Set</u>
Tubing	<u>2 3/8"</u>	<u>J-55</u>	<u>4.6#</u>	<u>X</u>		<u>2850'</u>	<u>2850'</u>		<u>2750'</u>
Liners									Perforations
									Top Bottom

24) APPLICANTS OPERATING RIGHTS were acquired from Irene Reilly, et al
 by Deed _____ Lease ☒ Other Contract _____ Dated January 17, 1889
 Wetzel County Clerk's Office in Lease Book 47 at Page 193

RECEIVED
Office of Oil and Gas
WV Department of
Environmental Protection

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm name: WV PUBLIC LANDS CORP. Operator Well No.: IRENE REILLY 16

LOCATION: Elevation: 1,117' Quadrangle: CENTERPOINT 7.5'

District: GREEN County: WETZEL
Latitude: 1,840 Feet south of 39 Deg 30 Min 0 Sec.
Longitude: 9,760 Feet west of 80 Deg 40 Min 0 Sec.

Company Address:	HG Energy PO Box 5519 Vienna, WV 26105	Casing & Tubing	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
Inspector:	Derek Haught				
Date Permit Issued:	6/23/2011				
Date Well Work Commenced:	10/13/2011				
Date Well Work Completed:	11/21/2011				
Verbal Plugging:					
Date Permission Granted On:					
Rotary X Cable Rig		7"	1094'	1094'	270 sks
Total vertical Depth (ft):	3170'				
Total Measured Depth (ft):	3170'				
Fresh Water Depth (ft):	400'	4 1/2"	3088.95'	3088.95'	150 sks
Salt Water Depth (ft):	None				
Is Coal being mined in ares (Y/N)?	No				
Coal Depths (ft): x	836'-846'				
Void(s) encountered (Y/N) depth(s):	NONE				

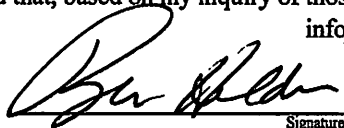
OPEN FLOW DATA

* Waterflood Producer

Producing formation	Gordon	Pay zone depth (ft)	2950'-2951'
Gas: Initial open flow	* MCF/d	Oil: Initial open flow	* Bbl/d
Final open flow	* MCF/d	Final open flow	* Bbl/d
Time of open flow between initial and final tests	* Hours		
Static rock pressure	* psig (surface pressure)	after	* Hours

Second producing formation		Pay zone depth (ft)	
Gas: Initial open flow	MCF/d	Oil: Initial open flow	Bbl/d
Final open flow	MCF/d	Final open flow	Bbl/d
Time of open flow between initial and final tests	Hours		
Static rock pressure	psig (surface pressure)	after	Hours

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.


Signature3/14/12
Date

Were core samples taken? No

Were cuttings caught during drilling? No

Were Y Electrical, N Mechanical, N or Geophysical logs recorded on this well?
Y/N Y/N Y/N

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Treatment : Treated perms 2950'-2591', 2953'-2961', 2964'-2965', 2975.5'-2976.5', and 2979'-2980' w/ 500 gals 15% HCL, 362 bbls cross linked gel, and 20,000# 20/40 sand.

Well Log : All depths are measured relative to KB (8' AGL).

Shale w/ sand streaks	0	-	836
Coal	836	-	846
Sand/Shale	846	-	1054
sand	1054	-	1076
shale	1076	-	1139
sand	1139	-	1174
shale	1174	-	1288
sand	1288	-	1334
shale	1334	-	1384
sand	1384	-	1441
shale	1441	-	1454
sand	1454	-	1483
shale	1483	-	1496
sand	1496	-	1531
shale	1531	-	1599
sand	1599	-	1616
shale	1616	-	1632
sand	1632	-	1640
shale	1640	-	1692
sand	1692	-	1725
shale	1725	-	1790
sand	1790	-	1800
shale	1800	-	1874
sand	1874	-	1912
shale	1912	-	2054
sand	2054	-	2069
shale	2069	-	2081
sand	2081	-	2106
Big Lime	2106	-	2174
Big Injun	2174	-	2343
shale	2343	-	2921
Gordon Stray	2921	-	2939
shale	2939	-	2947
Gordon	2947	-	2966
shale	2966	-	2974
Sand	2974	-	2984
shale	2984	-	3170
TD	3170		
T.D. -Logger	3156	KB	
T.D. -Driller	3170	KB	



1) Date:	July 31, 2013		
2) Operator's Well No.	Irene Reilly No. 16		
3) API Well No.	47	103	2655
	State	County	Permit
4) UIC Permit No.	UIC2R09501AP		

5) Surface Owner(s) To Be Served

6) Inspector	Derek Haught
Address	PO Box 85
	Smithville, WV 26178
Telephone	206-7613

Address

Address _____

Address _____

NA

RECEIVED
Office of Oil and Gas
Diane @ Whitaker

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at: depprivacyofficer@ny.gov

SEP 28 2013
a part of our regulatory duties
or as needed to comply with statutory
are your personal information. If you
wv.gov
depprivacyofficer@wv.gov
Environmental Protection

WW-2B1

Well No. Irene Reilly No. 16

West Virginia Department of Environmental Protection
Office of Oil and Gas

NOTICE TO SURFACE OWNERS

The well operator named below is preparing to file for a permit from the state to drill a new well. Before a well work permit can be filed with the Chief of the Office of Oil and Gas, the well operator is required to have given notice of the right to request water well or spring analytical testing. This notice shall be given to the owners or occupants of land which have a water well or spring being utilized for human consumption, domestic animals, or other general use and which is located within 1000 feet of the proposed well site.

With this form, the operator is giving you notice of your right to request analytical testing. The operator is required to sample and analyze the water wells or springs of all owners or occupants who request it. Therefore if you wish to have your water well or spring tested, contact the operator named below.

All sampling shall be completed prior to drilling. Within thirty (30) days of the receipt of such sample analyses the operator shall submit the results to the Chief of the Office of Oil and Gas and to the owners or occupants who may have requested them.

If no water well or spring is located within 1000 feet, the Chief may require the operator to sample and analyze water from a water well or spring within 2000 feet of the proposed well site.

Be advised, you have the right to sample and analyze any water supply at your own expense.

The laboratory used by the operator to analyze the samples will be approved by the Chief. The operator named below has decided to use the following laboratory to analyze the water samples:

X Contractor Name Sturm Environmental Services
_____ Well operator's private laboratory

Well Operator HG Energy, LLC
Address 5260 Dupont Road
Parkersburg, WV 26101
Telephone 304-420-1119

FOR OPERATOR'S USE ONLY: Below, or on an attached page, list those persons which were given this notice. Place an asterisk beside the one(s) that contacted you and requested sampling and analyses. If there were no requests made, indicate by underlining which one you have selected to sample and analyze. If there are no water wells or springs within 1000 feet of the proposed site please indicate such.

No known Water Supply Sources are located within 2000' of proposed well.

RECEIVED
Office of Oil and Gas

SEP 26 2013

WV Department of
Environmental Protection

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator HG Energy, LLC OP Code 494497948

Watershed Fluharty Fork Quadrangle Centerpoint 7.5'

Elevation 1117' County Wetzel District Green

Description of anticipated Pit Waste: A pit will not be used

Do you anticipate more than 5,000 bbls of water to complete the proposed well work Yes No X

Will a synthetic liner be used in pit? NA If so, what mil.

Proposed Disposal Method For Treated Pit Wastes:

 Land Application

 Underground Injection (UIC Permit Number)

 Reuse (at API Number)

 Off Site Disposal (Supply Form WW-9 for disposal location)

 Other (Explain)

Drilling medium anticipated for this well? Air, fresh water, oil based, etc. NA

- If oilbased, what type? Synthetic, petroleum, etc.

Additives to be used? NA

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc.

- If left in pit and plan to solidify, what medium will be used? Cement, lime, sawdust NA

- Landfill or offsite name/permit number?

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature	<u>Diane C White</u>
Company Official (Typed Name)	<u>Diane C. White</u>
Company Official Title	<u>Accountant</u>

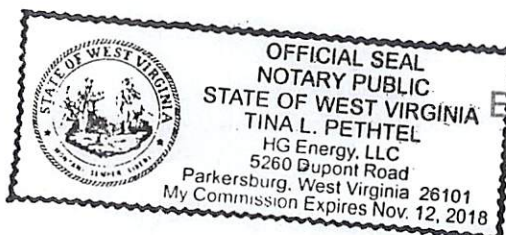
Subscribed and sworn before me this 1 day of August 2013

My commission expires Nov. 12, 2018

Form WW-9

Notary Public **RECEIVED**
Office of Oil and Gas

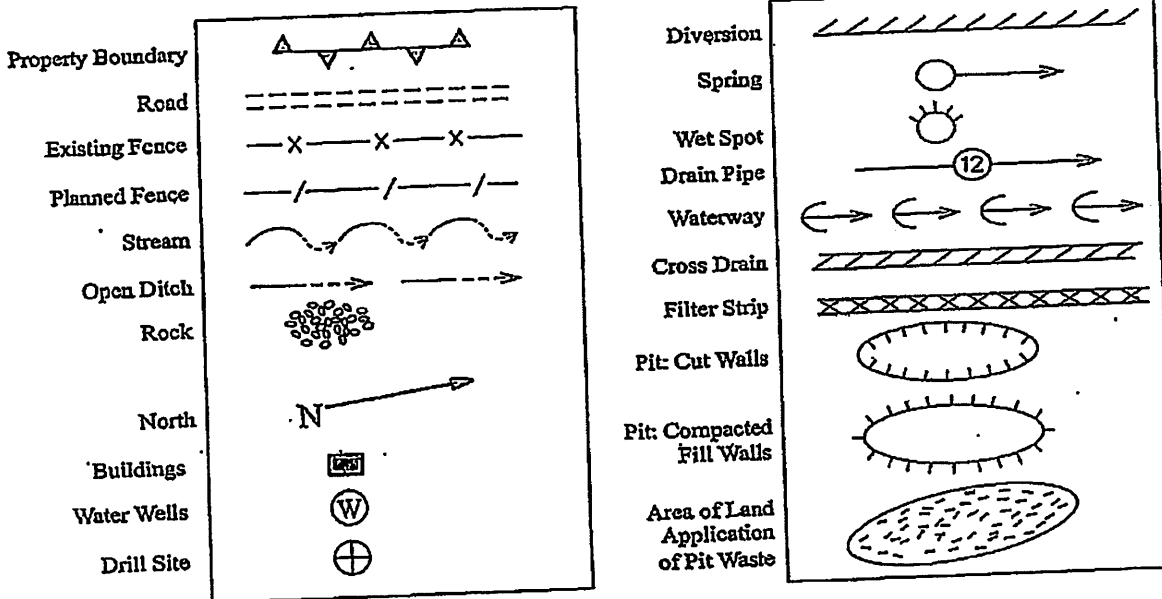
SEP 26 2013



WV Department of
Environmental Protection

WW9-Back

Legend



Proposed Revegetation Treatment: Acres Disturbed Area I Approx. 0.2 Ac. Prevegetation pH _____

Area II Approx. 0.1 Ac.

Lime 2 Tons/Acre or Correct to pH 6.5
 Fertilizer (10-20-20 or Equivalent) 500 Lbs./Acre (500 lbs. Minimum)
 Mulch Straw 2 Tons/Acre

SEED MIXTURES

<u>Area I (Location)</u>	
Seed Type	Lbs/Ac.
Tall Fescue	40
Ladino Clover	5

<u>Area II (Road)</u>	
Seed Type	Lbs/Ac.
Tall Fescue	40
Ladino Clover	5

Attach:
 Drawing(s) of road, location, pit and proposed area for land application
 Photocopied section of involved 7.5' topographic sheet.

Plan approved by: [Signature]
 Comments: _____

Title: Oil & Gas Inspector Date: 8-12-13

Field Reviewed? ☒ Yes ☐ No

Received

SEP 26 2013

Office of Oil and Gas
 WVA Dept. of Environmental Protection

5559203.01

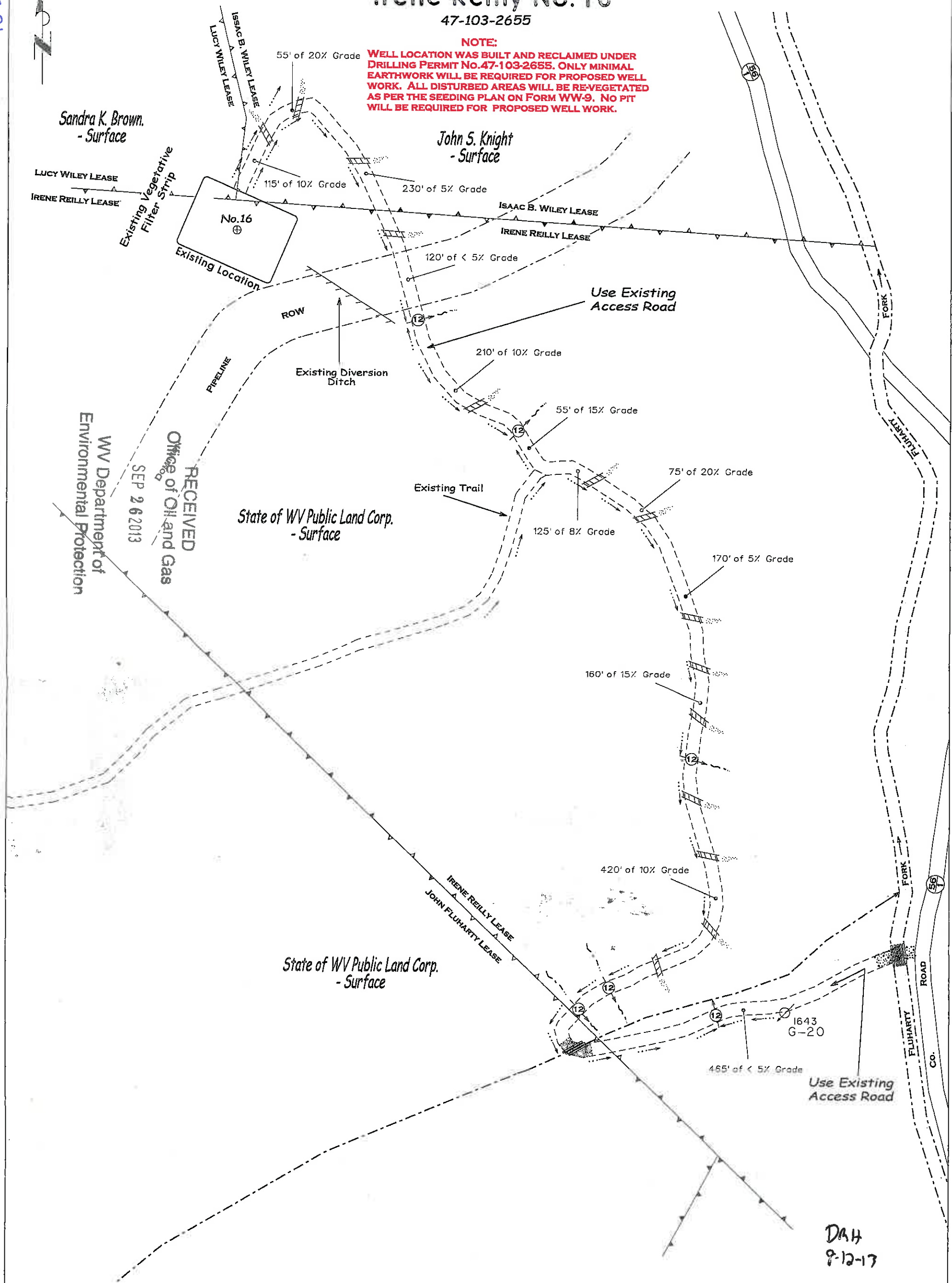
Reclamation Plan For:

Irene Reilly No. 16

47-103-2655

NOTE:

WELL LOCATION WAS BUILT AND RECLAIMED UNDER DRILLING PERMIT No. 47-103-2655. ONLY MINIMAL EARTHWORK WILL BE REQUIRED FOR PROPOSED WELL WORK. ALL DISTURBED AREAS WILL BE RE-VEGETATED AS PER THE SEEDING PLAN ON FORM WW-9. NO PIT WILL BE REQUIRED FOR PROPOSED WELL WORK.



NOTE
REFER TO THE WVDEP
EROSION AND SEDIMENT CONTROL
FIELD MANUAL VER. MAY 2012 FOR
BMPs CONTROLLING EROSION AND
SEDIMENT FROM SOIL-DISTURBING
OPERATIONS.

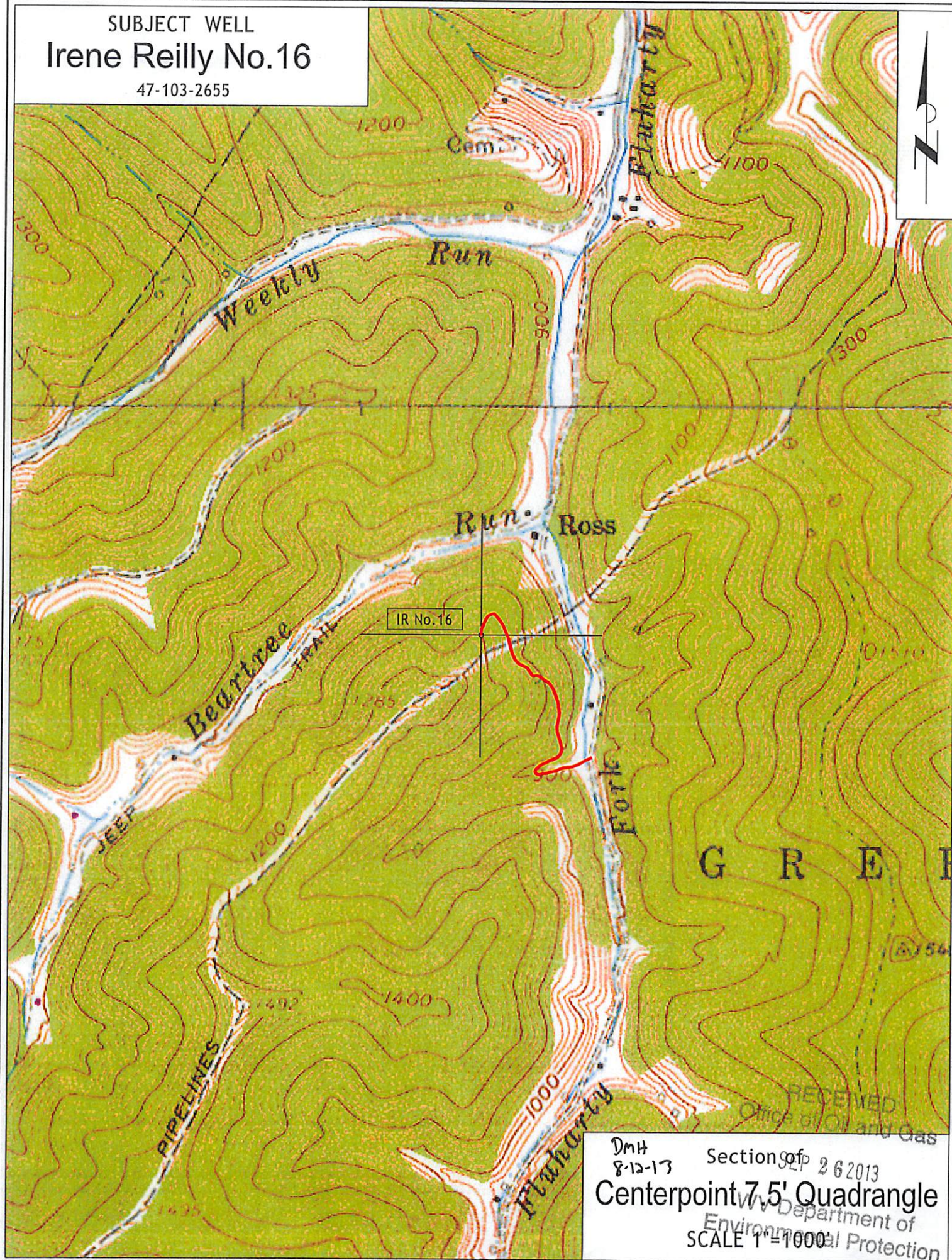
Notes:

- Requested permit is for workover of existing well.
- Access from County Road to well location is existing. Structures will be maintained.
- All disturbed areas will be re-vegetated as outlined on Form WW-9.
- Maintain sediment barriers and drainage structures.
- All road grades < 5% except as noted.

Note: Drawing not to Scale

SUBJECT WELL
Irene Reilly No.16

47-103-2655



DMH
8-12-13
Section of SEP 26 2013
Centerpoint 7.5' Quadrangle
U.S. Department of
Environmental Protection
SCALE 1"=1000'

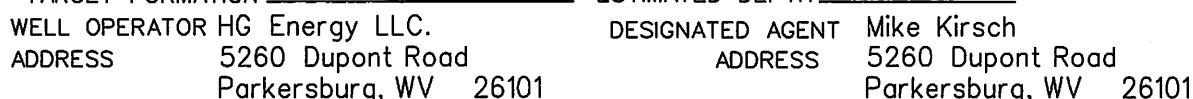
RECEIVED
Office of Oil and Gas

-9,760'

N - 4,371,758 m.
E - 525,701 m.

LONGITUDE 80° 40' 00"

Latitude = 39° 29' 41.9"



FORM IV-6



HG Energy, LLC
5260 Dupont Road
Parkersburg, WV 26101
(304) 420-1100 - Office
(304) 863-3172 - Fax

103026555

CK # 2330 5500

July 30, 2013

Mr. Jeff McLaughlin
WVDEP
Division of Oil & Gas
601 57th Street
Charleston, West Virginia 25304

RE: Irene Reilly No. 16 (API 47-103-2655)
Green District, Wetzel County
West Virginia

Dear Mr. McLaughlin:

Enclosed are the Forms WW-3A, WW-3B, WW-9, WW-2(B1), mylar of plat, reclamation plan, topo map and copy of the certified mailing receipt for a permit to convert the above-captioned shallow, producing well to an injection well. Our check in the amount of \$550 is attached.

If you have any questions regarding this application, please call me at 304-420-1119.

Very truly yours,

Diane C White

Diane C. White

Enclosures

cc: WV Public Lands Corporation – Certified
John S. Knight – Certified
Sandra Brown - Certified
Derek Haught - Inspector

RECEIVED
Office of Oil and Gas

SEP 26 2013

WV Department of
Environmental Protection